Dell™ OptiPlex™ GX400 Service Manual

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

A00 28 Feb 2001

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AGP Card Brace

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Removing the AGP Card Brace

To access some components on the board, you may need to remove the AGP card brace.

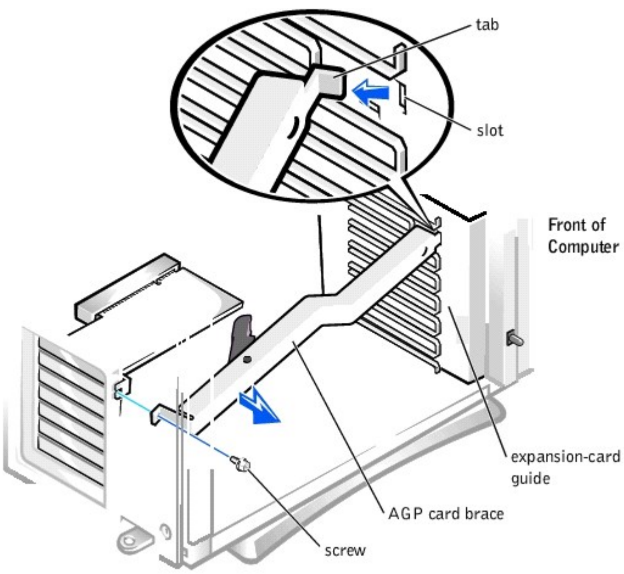
NOTE: Your computer has either an AGP card brace or an AGP card clip.

CAUTION: Before you perform this procedure, see "Precautionary Measures."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.

2. Remove the screw that secures the AGP card brace to the chassis.

Removing the AGP Card Brace



3. Rotate the brace up until the tab disengages from the card guide at the front of the chassis. Then lift the brace away from the chassis.

Replacing the AGP Card Brace

To replace the AGP card brace, perform the removal procedure in reverse.

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Computer Battery

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Removing the Computer Battery

CAUTION: There is a danger of the new battery exploding if it is installed incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

CAUTION: Before you perform this procedure, see "Precautionary Measures."

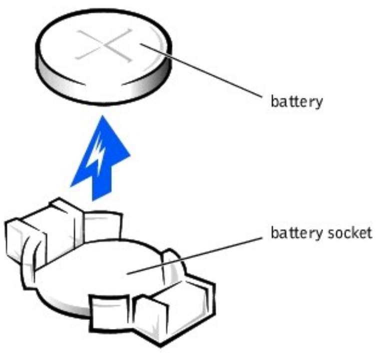
NOTICE: Before disconnecting a peripheral from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and peripherals, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Remove the battery.

   To locate the battery on the system board, see "System Board Components."

   Pry the battery out of its socket with your fingers or with a blunt, nonconductive object, such as a plastic screwdriver.

Removing the Computer Battery



Replacing the Computer Battery

1. Install the new battery.

   Orient the battery with the side labeled "+" facing up (see "Removing the Computer Battery"). Then insert the battery into the socket, and snap it into place.
2. Replace the computer cover and restart the computer.
3. Enter system setup and enter the current time and date. Then exit system setup and save the information.

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Before You Begin

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Precautionary Measures

Before you remove the computer cover, perform the following steps in the sequence indicated.

1. Turn off your computer and any devices.

2. Disconnect your computer and devices from their power sources. Also, disconnect any telephone or telecommunication lines from the computer.

   Doing so reduces the potential for personal injury or shock.

3. If you are disconnecting a device from the computer or are removing a component from the system board, wait 10 to 20 seconds after disconnecting the computer from AC power before disconnecting the device or removing the component to avoid possible damage to the system board.

4. Wear a wrist grounding strap, and clip it to an unpainted metal surface, such as the padlock loop on the back of the chassis. If a wrist grounding strap is not available, touch any unpainted metal surface on the back of the computer or on the computer chassis, such as the power supply, to discharge any static charge from your body before touching anything inside the computer. While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components. Also avoid touching components or contacts on a card and avoid touching pins on a chip.

5. Verify that the standby power light on the system board is not on. If it is on, you may need to wait 10 to 30 seconds for it to go out. To locate this light, see "System Board Components."

Recommended Tools

Some of the procedures in this document require the use of a #2 Phillips- head screwdriver.

Also, use a wrist grounding strap as explained in "Precautionary Measures."

Restarting the Computer

1. Replace the computer cover, reconnect the computer and devices to their electrical outlets, and turn them on.

   NOTE: If enabled, the **Chassis Intrusion** option causes the following message to be displayed the next time you restart your computer:

   ```
   ALERT! Cover was previously removed.
   ```

2. To reset the **Chassis Intrusion** option, enter system setup, select the **System Security** option, and reset the **Chassis Intrusion** option to **Enabled** or **Enabled Silent**.

   NOTE: When the setup password is enabled, you must know the setup password before you can reset the **Chassis Intrusion** option.

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Chassis Intrusion Switch

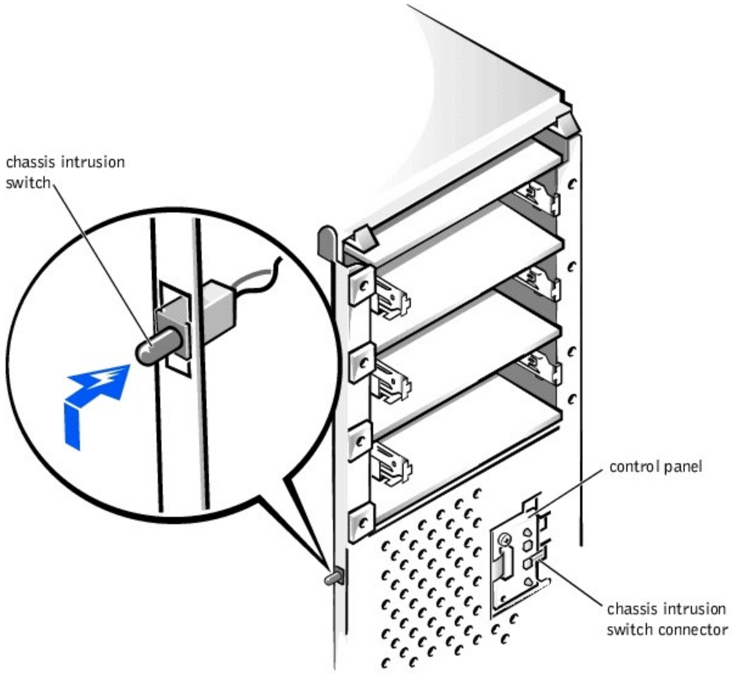
Dell™ OptiPlex™ GX400 Service Manual

Removing the Chassis Intrusion Switch

CAUTION: Before you perform this procedure, see "Precautionary Measures."

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Remove the front panel.
3. Remove the AGP card brace or AGP card clip.
4. Remove all expansion cards.
5. Remove the hard drive bracket.
6. Remove the expansion-card guide.
7. Disconnect the chassis intrusion switch cable from the control-panel connector (ALERT). To locate this connector, see "Control Panel Components."
8. Slide the chassis intrusion switch up out of its slot on the chassis.
9. Lift the chassis intrusion switch and switch cable away from the chassis.



Removing the Chassis Intrusion Switch

Replacing the Chassis Intrusion Switch

To replace the chassis intrusion switch, perform the removal procedure in reverse.

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Control Panel

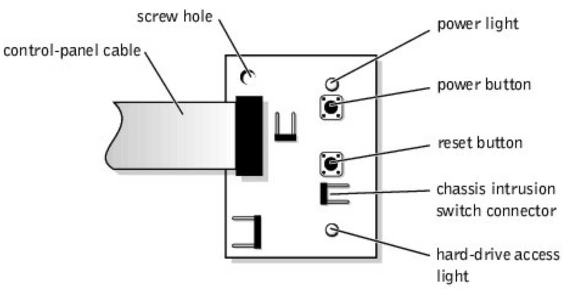
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- [Components](#)
- [Removing the Control Panel](#)
- [Replacing the Control Panel](#)

Components

The following figure shows the control panel and the location of its principal connectors and components.

Control Panel Components



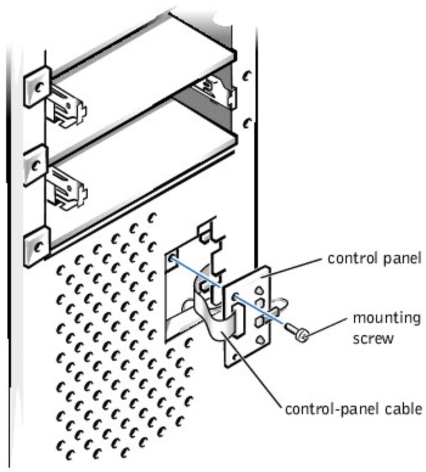
Removing the Control Panel

CAUTION: Before you perform this procedure, see "[Precautionary Measures](#)."

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "[System Board Components](#)."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then [remove the computer cover](#).
2. [Remove the front panel](#).
3. [Remove the AGP card brace](#) or [AGP card clip](#).
4. [Remove all expansion cards](#).
5. [Remove the hard-drive bracket](#).
6. [Remove the expansion-card guide](#).
7. [Remove the chassis intrusion switch](#).
8. Remove the screw that secures the control panel.
9. Pull the control panel out slightly and unplug the control panel cable.
10. To remove the control panel cable:
    a. Pull the control panel connector inside the chassis through the opening.
    b. Disconnect the control panel cable from the connector on the [system board](#) and lift the control panel cable away from the chassis.

Removing the Control Panel



Replacing the Control Panel

To replace the control panel, perform the removal procedure in reverse.

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Computer Cover

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- [Removing the Computer Cover](#)
- [Replacing the Computer Cover](#)

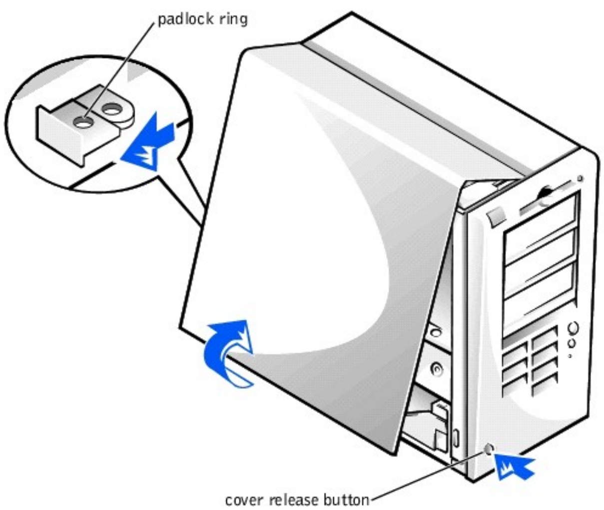
Removing the Computer Cover

⚠ **CAUTION: Before you perform this procedure, see "[Precautionary Measures](#)."**

1. Turn off the computer and peripherals, and disconnect them from their electrical outlets.
2. If installed, remove the padlock from the padlock ring on the back panel.
3. Remove the computer cover.

   a. Face the back of the computer and slide the outer padlock ring to the left to unlock the cover release mechanism.

Cover Release Mechanism



   b. Press the cover release button located at the bottom-left corner of the front panel.

   c. Rotate the bottom of the cover outward, away from the chassis.

   d. Lift the cover away from the chassis.

   e. Lay the computer down on its right side before you begin working inside the chassis.

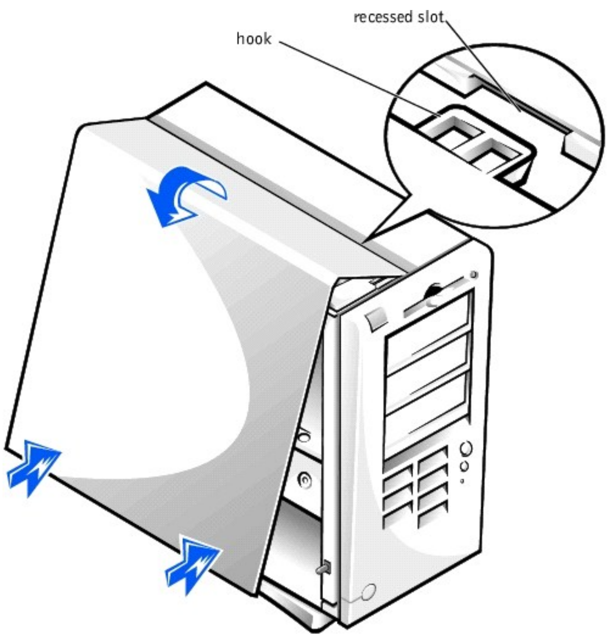
Replacing the Computer Cover

1. Check all cable connections and fold cables out of the way so that they do not catch on the computer cover. Ensure that cables are not routed over the drive cage—they will prevent the cover from closing properly.
2. Ensure that no tools or extra parts (including screws) are left inside the computer chassis.
3. Replace the computer cover.

   a. Hold the cover at a slight angle. While aligning the top of the cover with the top of the chassis, insert the three hooks on the cover into the three recessed slots on the computer chassis.

b. Rotate the cover downward toward the bottom of the chassis. With both hands, press against the bottom edge of the cover to ensure that the securing hooks at the bottom of the cover click into place.

Replacing the Cover



c. Slide the two parts of the padlock ring together to lock the cover release mechanism.

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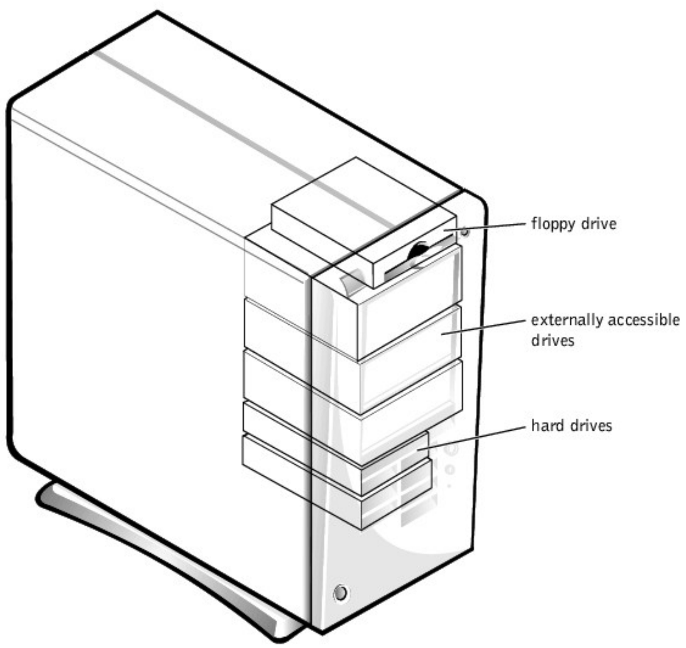
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Disk Drives and Media

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Drive Location

Drive Locations



Removing the Floppy Drive

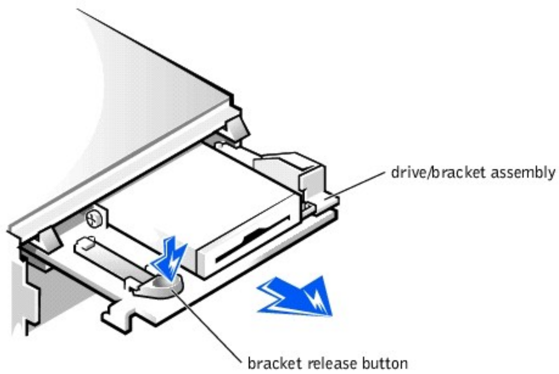
CAUTION: Before you perform this procedure, see "Precautionary Measures."

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Rotate the power supply away from the system board.
3. Remove the front panel.
4. Disconnect the DC power and interface cables from the back of the drive.

5. Press the green floppy-drive bracket release button and slide the drive assembly out of the chassis.

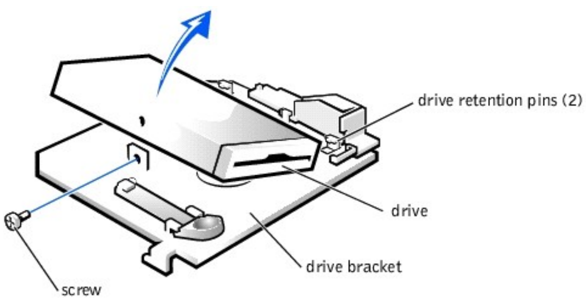
Removing the Floppy-Drive Bracket



6. Remove the mounting screw.

7. Rotate the left side of the floppy drive upward and lift it free from the drive bracket.

Removing the Floppy Drive from the Bracket



Replacing the Floppy Drive

1. Mount the floppy drive on the bracket:

   a. Lower the right side of the floppy drive onto the bracket, inserting the drive retention pins into the screw holes on the drive. See "Removing the Floppy Drive from the Bracket."

   b. Lower the left side of the floppy drive downward and secure it to the bracket with the screw you removed in step 6 of "Removing the Floppy Drive."

2. Slide the drive assembly into the chassis until the green floppy-drive bracket release button snaps securely into place. See "Removing the Floppy-Drive Bracket."

3. Connect the interface cable for the drive. To locate this connector, see "System Board Components."

NOTICE: To avoid possible damage, you must match the colored strip on the interface cable with pin 1 on both the drive and system board connectors.

4. Connect a DC power cable to the power input connector on the back of the drive.

5. Ensure that all cables are firmly connected. Fold cables out of the way to provide airflow for the fan and cooling vents.

6. Rotate the power supply back into position until the securing tab snaps into the release latch.

7. Replace the computer cover and restart the computer.

8. Run the Dell Diagnostics to verify that the drive is operating properly.

Removing a CD, Zip, or Other External Drive

⚠ **CAUTION: Before you perform this procedure, see "Precautionary Measures."**

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.

2. Rotate the power supply away from the system board.

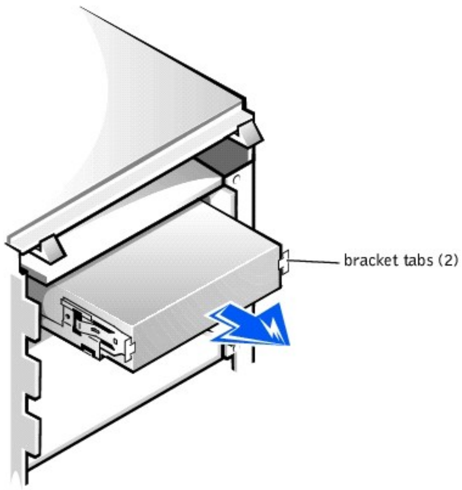
3. Remove the front panel.

4. Disconnect the DC power and interface cables from the back of the drive.

5. Remove the drive bracket from the chassis drive bay you want to use.

   Squeeze together the metal bracket tabs that extend from each side of the drive bracket, and pull the bracket out of the bay.

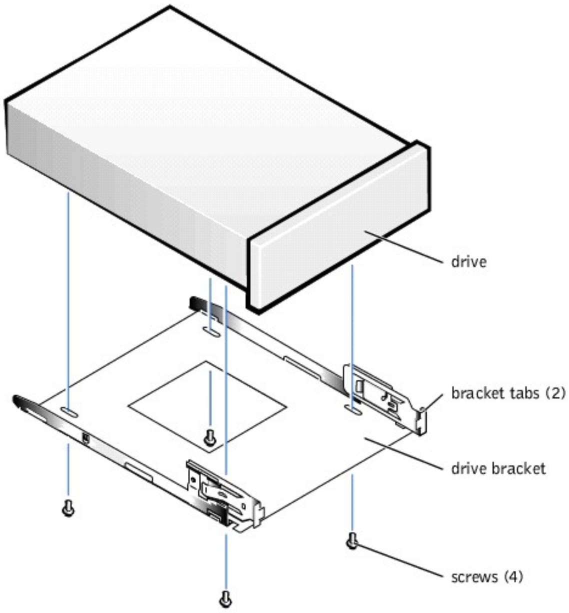
Removing a Drive Bracket



6. Remove the drive from the bracket.

   Turn the drive/bracket assembly upside down and remove the four screws that secure the drive to the bracket.

Removing the Drive from the Bracket



Replacing a CD, Zip, or Other External Drive

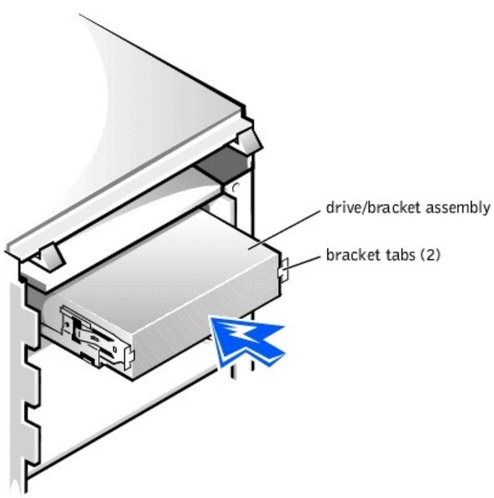
1. Attach the new drive to the drive bracket.

   Turn the drive upside down, and fit the bracket on the drive so that the screw holes align. To ensure proper installation, all screw holes should be aligned and the tabs on the front of the bracket should be flush with the front of the drive (see "Removing the Drive from the Bracket").

   To further ensure proper positioning of the drive in the chassis, insert and tighten all four screws *in the order in which the holes are numbered* (the holes are marked "1" through "4").

2. Slide the new drive/bracket assembly into the drive bay until both drive bracket tabs snap securely into place.

Installing the Drive Bracket



3. Connect the interface cable for the drive. See "Attaching Drive Cables."

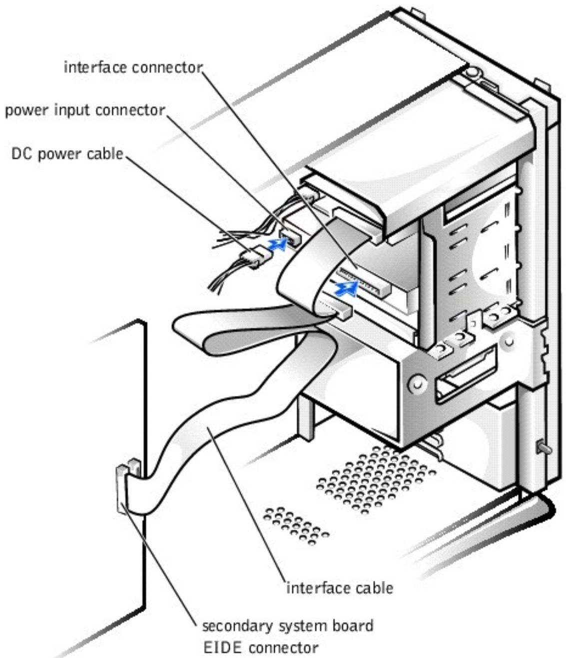
NOTICE: To avoid possible damage, you must match the colored strip on the interface cable with pin 1 on both the drive and system board connectors.

a. If you are installing an EIDE device, ensure that the interface cable is properly connected to the EIDE connector on the system board.

b. If you are installing a SCSI device, ensure that the SCSI interface cable is properly connected to the interface connector on the SCSI controller board.

4. Connect a DC power cable to the power input connector on the back of the drive.

Attaching Drive Cables



5. Ensure that all cables are firmly connected. Fold cables out of the way to provide airflow for the fan and cooling vents.

6. If the chassis drive bay was previously empty, remove the corresponding insert from the front panel.

   Hold the front panel with the outside facing you. Press the ends of the insert with your thumbs until the insert snaps free of the front panel.

7. Replace the front panel.

8. Rotate the power supply back into position until the securing tab snaps into the release latch.

9. Replace the computer cover and restart the computer.

10. If the drive you installed is a hard drive, enter system setup, and update the drive settings.

    After you update the system settings, exit system setup and reboot the computer.

11. If the device you installed is a hard drive, partition and logically format the drive before proceeding to the next step.

    See the operating system's documentation for instructions.

12. Test the drive to verify that it is operating properly.

    - If the drive you installed is a hard drive, run the Dell Diagnostics to test the drive.
    - For other types of drives, see the drive's documentation for information on testing the drive.

13. If the drive you installed is the primary hard drive, install the operating system on the drive.

    See the operating system's documentation for instructions.

NOTE: Tape drives sold by Dell come with their own operating software and documentation. After you install a tape drive, refer to the documentation that came with the drive for instructions on installing and using the tape drive software.

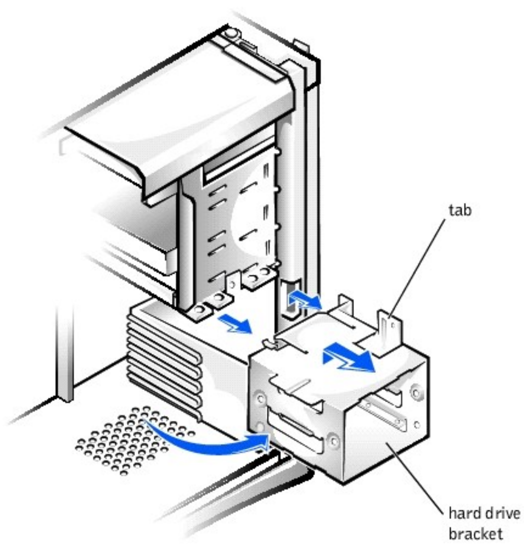
Removing a Hard Drive

⚠ **CAUTION: Before you perform this procedure, see "Precautionary Measures."**

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

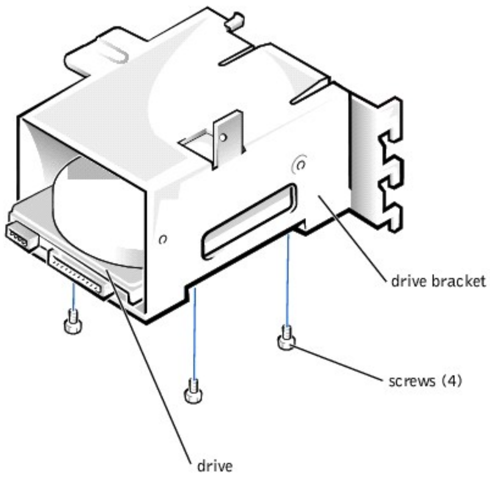
1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Rotate the power supply away from the system board.
3. Remove the front panel.
4. Disconnect the DC power and interface cables from the back of the drive.
5. Rotate the hard drive bracket out of the chassis using the metal tab. Grasp the hard drive bracket and pull it out of the chassis.

Removing the Hard-Drive Bracket



6. Remove the screw(s) that secures the drive in the bracket.
7. Remove the drive from the bracket

Removing a Hard Drive from the Bracket



Replacing a Hard Drive

1. Slide the drive into one of bracket bays, oriented so that the connectors on the back of the drive will face the interior of the chassis when the bracket is reinstalled. See "Removing a Hard Drive from the Bracket."

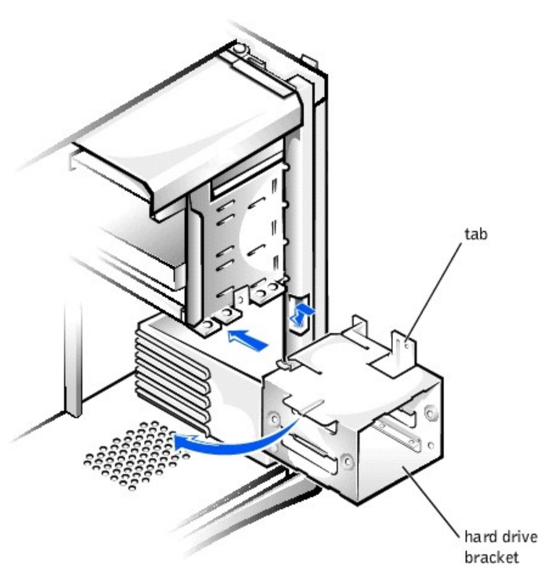
 NOTE: Orient the drive in the bracket so that its bottom will face the left side of the chassis when the bracket is installed in the chassis.

2. Align the screw hole(s) of the drive and bracket, and secure the drive in the bracket using the screws that came with the upgrade kit.

3. Reinstall the hard-drive bracket in the chassis.

 Insert the drive bracket into the chassis, and rotate the bracket until the tabs snap into place.

Installing the Hard-Drive Bracket



4. Connect the interface cable for the drive. See "Attaching Hard-Drive Cables."

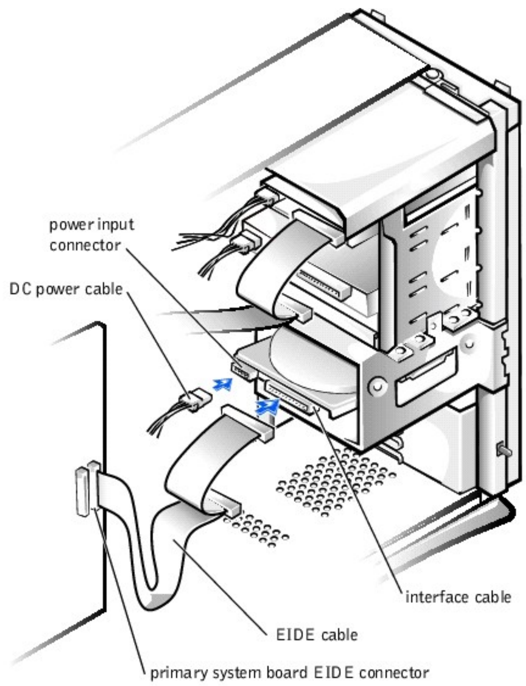
NOTICE: To avoid possible damage, you must match the colored strip on the interface cable with pin 1 on both the drive and system board connectors.

 a. If you are installing an EIDE device, ensure that the IDE interface cable is properly connected to the EIDE connector on the system board.

b. If you are installing a SCSI device, ensure that the SCSI interface cable is properly connected to the interface connector on the SCSI controller board.

5. Connect a DC power cable to the power input connector on the back of the drive.

Attaching Hard-Drive Cables



6. Ensure that all cables are firmly connected. Fold cables out of the way to provide airflow for the fan and cooling vents.

7. Ensure that the control panel cable is firmly connected to the system board.

   The control panel contains the hard-drive activity light. To locate the control panel system board connector, see "System Board Components."

8. Replace the front panel.

9. Rotate the power supply back into position until the securing tab snaps into the release latch.

10. Replace the computer cover and restart the computer.

11. Enter system setup, and update the drive settings.

    After you update the system settings, exit system setup and reboot the computer.

12. Partition and logically format the drive before proceeding to the next step.

    See the operating system's documentation for instructions.

13. Run the Dell Diagnostics to test the drive.

14. If the hard drive you installed is the primary drive, install the operating system on the drive.

    See the operating system's documentation for instructions.

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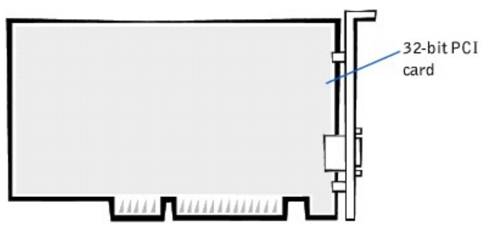
Expansion Cards

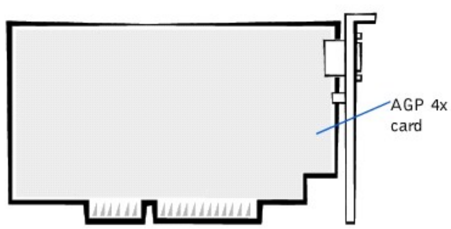
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Expansion Card Types

- Up to five 32-bit, 33-MHz PCI expansion cards.
- One 32-bit AGP card. The expansion slot supports AGP 4x or 2x Pro50 modes operating at 1.5 V.

Expansion Card Types





Removing an Expansion Card

CAUTION: Before you perform this procedure, see "Precautionary Measures."

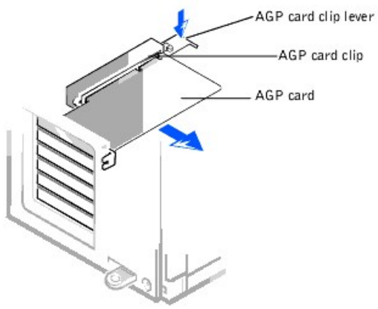
NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Lay the computer on its right side.
3. Remove the AGP card brace.

   If you have an AGP card clip, disconnect any cables attached to the card and press the AGP card clip lever toward the expansion-card cage.

   NOTE: Do not remove the video card retention clip from the expansion card slot.

AGP Card Clip



4. If necessary, disconnect any cables connected to the card.

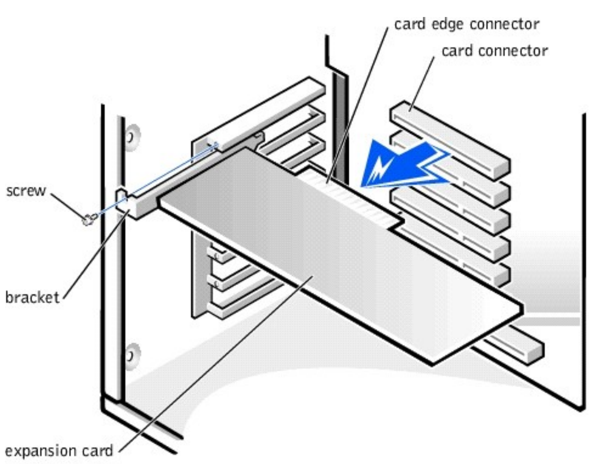
5. Remove the screw that secures the expansion card bracket to the chassis.

   Save the screw to use when installing the expansion card or filler bracket later in this procedure.

NOTICE: Do not rock the AGP card when removing it from the socket.

6. Grasp the card by its top corners and ease it out of its connector.

Removing an Expansion Card



7. If you are replacing the AGP card in the slot, push the lever on the AGP clip toward the expansion slots so that it is out of the way when installing the card. Release the lever once the card is firmly in the slot.

8. If you are removing the card permanently, install a filler bracket in the empty card-slot opening, using the screw you removed in step 5.

   If you need a filler bracket, contact Dell. See the *User's Guide* for information on contacting Dell.

NOTE: Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the computer. The brackets also keep dust and dirt out of your computer.

9. If you removed the AGP brace, replace it.

   If you released the AGP card clip, push the lever so that the lever is out of the way while you install a new card or filler bracket. Release the lever when the card or filler bracket is installed.

10. Stand the computer upright.

11. Replace the computer cover and restart the computer.

12. If you removed a sound card, perform the following steps:

    a. Enter system setup, select **Integrated Devices** and change the setting for **Sound** to **On**.

b. Connect external audio devices to the audio connectors on the back panel.

13. If you removed an add-in network adapter, perform the following steps:

    a. Enter system setup, select **Integrated Devices** and change the setting for **Network Interface Card** to **On**.

    b. Connect the network cable to the integrated network adapter connector on the back panel.

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Expansion-Card Guide

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Removing the Expansion-Card Guide

CAUTION: Before you perform this procedure, see "Precautionary Measures."

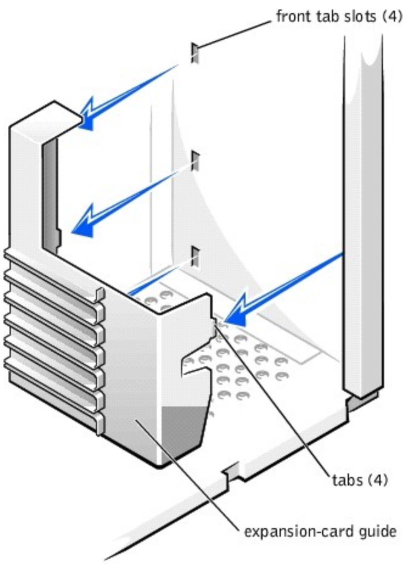
NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Remove the AGP card brace or the AGP card clip.
3. Remove all expansion cards.
4. Rotate the hard-drive bracket out and remove it from the chassis.
5. Remove the expansion-card guide:
   a. From the outside of the chassis, press in the tab.

      This will release the card-guide tab from the chassis.

   b. Rotate the released side of the card guide away from the front chassis wall.
   c. With the released side of the card guide away from the chassis wall, pull the card guide up away from the chassis.

Removing the Expansion-Card Guide



Replacing the Expansion-Card Guide

Insert the two bottom tabs in the slots in the chassis wall. Then, rotate the card guide toward the front chassis wall until the top tab snaps into the slot in the front chassis wall. See "Removing the Expansion-Card Guide."

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Front Panel

Dell™ OptiPlex™ GX400 Service Manual

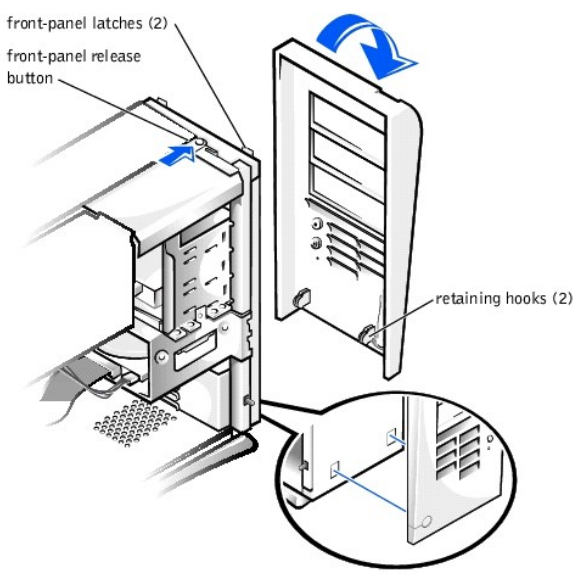
Removing the Front Panel

⚠ **CAUTION: Before you perform this procedure, see "Precautionary Measures."**

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.

2. Release the front panel by pressing the green front-panel release button marked with the icon.

Removing the Front Panel



3. While pressing the front-panel release button, rotate the top of the panel outward, away from the chassis.

4. Lift the panel away from the chassis.

Replacing the Front Panel

Fit the two front-panel retaining hooks into the recessed slots at the bottom of the chassis. See "Removing the Front Panel." Then rotate the top of the panel toward the chassis until the front-panel latches snap into the tabs on the front panel.

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Front-Panel Buttons

Dell™ OptiPlex™ GX400 Service Manual

- Removing Front-Panel Buttons
- Replacing Front-Panel Buttons

Removing Front-Panel Buttons

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.

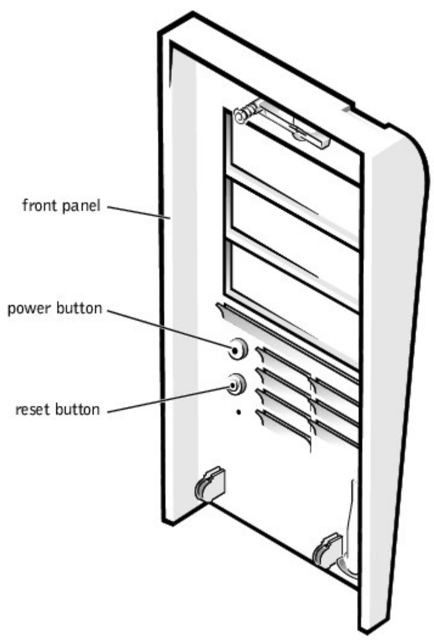
2. Remove the front panel.

3. Lay the front panel down, with the inside of the panel facing up.

4. Remove the power and reset buttons by using a small screwdriver to push in the plastic clips that secure the button to the computer cover.

   When these clips are released, the button comes free from the front panel.

Removing Front-Panel Buttons



Replacing Front-Panel Buttons

Replace the front-panel buttons.

- *To replace the power button*, insert the button into the hole in the front panel of the computer cover so that the button's clips secure it to the cover.
- *To replace the reset button*, insert the button into the hole in the front panel of the computer cover so that the button's clips secure it to the cover.

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Front-Panel Inserts

Dell™ OptiPlex™ GX400 Service Manual

- Removing Front-Panel Inserts
- Replacing Front-Panel Inserts

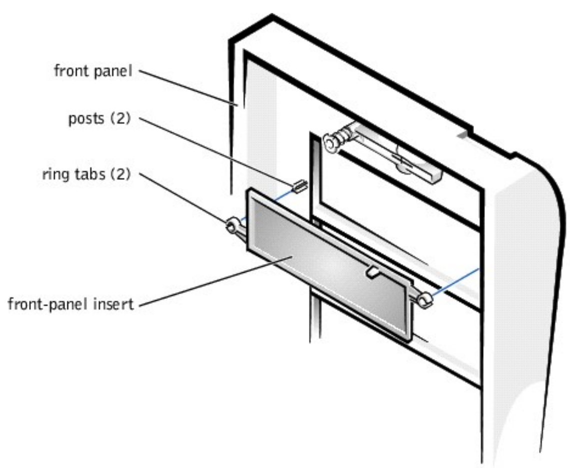
Removing Front-Panel Inserts

CAUTION: Before you perform this procedure, see "Precautionary Measures."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Remove the front panel.
3. Hold the front panel with the front facing you.
4. Remove the front-panel insert for the chassis drive bay you want to use.

   Use your thumbs to press the sides of the insert until it snaps free of the front panel.

Removing Front-Panel Inserts



Replacing Front-Panel Inserts

Position the two ring-tabs over the posts on the inside of the bay opening, and then press the ring tabs over the posts. See "Removing Front-Panel Inserts."

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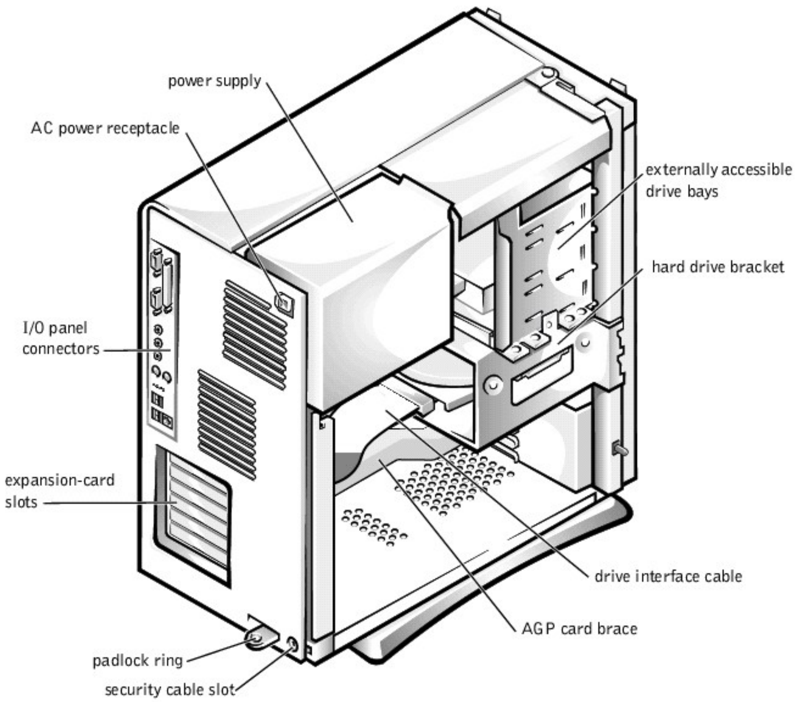
Inside Your Computer

Dell™ OptiPlex™ GX400 Service Manual

- Chassis Interior

Chassis Interior

Chassis Interior



NOTE: Before you remove the cover, you must first slide the outer padlock ring to the left to unlock the cover release mechanism. See "Cover Release Mechanism."

NOTE: Your computer may have an AGP clip instead of an AGP card brace.

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System Memory

Dell™ OptiPlex™ GX400 Service Manual

Removing a Memory Module

CAUTION: Before you perform this procedure, see "Precautionary Measures."

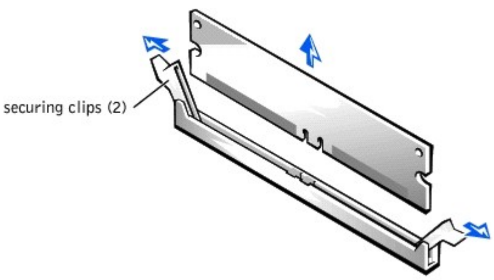
CAUTION: RIMMs can get very hot during system operation. Be sure that the RIMMs have had sufficient time to cool before you touch them.

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Lay the computer on its right side.
3. Rotate the power supply away from the system board.
4. Remove the memory modules (RIMMs or CRIMMs):
   a. Press the securing clips at each end of the socket outward simultaneously until the module pops out slightly from the socket.
   b. Lift the module away from the socket.

   NOTE: If you remove a module (RIMM or CRIMM), you must install another module in the empty socket before turning on the computer.

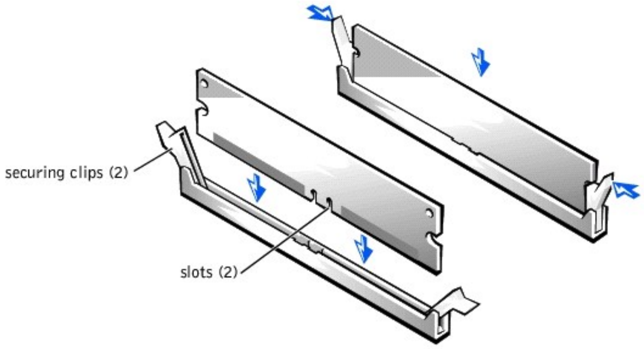
Removing a Memory Module



Replacing a Memory Module

1. Install the memory module:
   a. Press the securing clips at each end of the socket outward until they snap open.
   b. Align the slots on the bottom of the memory module with the two ridges inside the socket.
   c. Press the memory module straight down into the socket until the securing clips snap into place at the ends of the module.

Installing a Memory Module



2. Rotate the power supply back into position until the securing tab snaps into the release latch.

3. Stand the computer upright.

4. Replace the computer cover and restart the computer.

   The computer detects that the new memory does not match the existing configuration information and generates the following message:

```
The amount of system memory has changed.
Strike the F1 key to continue, F2 to run the setup utility
```

5. Enter system setup, and check the value for **System Memory**. The computer should have already changed the value of **System Memory** to reflect the newly installed memory. If the new total is correct, skip to step 7.

6. If the memory total is incorrect, repeat step 1 and step 3 of "Removing a Memory Module." Check the installed modules to ensure that they are seated properly in their sockets. Then repeat step 2 through step 5 of this procedure.

7. When the **System Memory** total is correct, exit system setup.

8. Run the Dell Diagnostics to verify that the memory modules are operating properly.

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Microprocessor

Dell™ OptiPlex™ GX400 Service Manual

Removing the Microprocessor

CAUTION: Before you perform this procedure, see "Precautionary Measures."

NOTICE: Before disconnecting a device from the computer or removing a component from the board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

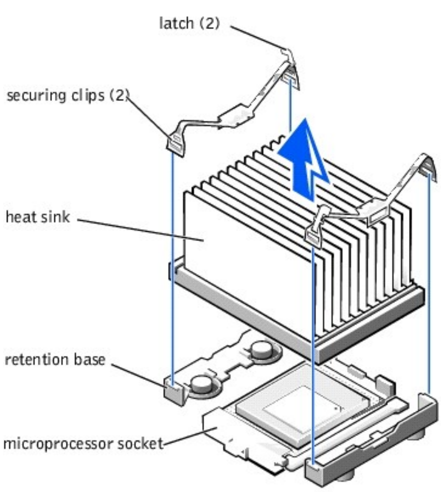
1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Lay the computer down on its right side.
3. Rotate the power supply away from the system board.
4. Remove the airflow shroud.
5. Remove the microprocessor heat sink:
   a. For each of the metal clips that secure the heat sink to the microprocessor, press down on the clip's latch to release it from the heat-sink retention base. Then lift the clip away from the heat sink.
   b. Lift the heat sink away from the microprocessor.

NOTE: If you are installing a microprocessor upgrade kit from Dell, return the original heat sink assembly and microprocessor package to Dell in the same package in which your upgrade kit was sent. Your microprocessor upgrade kit should include a replacement microprocessor heat sink and two replacement securing clips.

NOTE: The bottom of the heat sink is coated with thermal grease that conducts heat from the microprocessor to the heat sink. Some of this grease will remain on the microprocessor when you remove the heat sink.

NOTICE: While you are replacing the microprocessor, lay the heat sink down with the thermal grease facing upward. Do not lay the heat sink down with the thermal grease touching the work surface.

Removing the Microprocessor Heat Sink

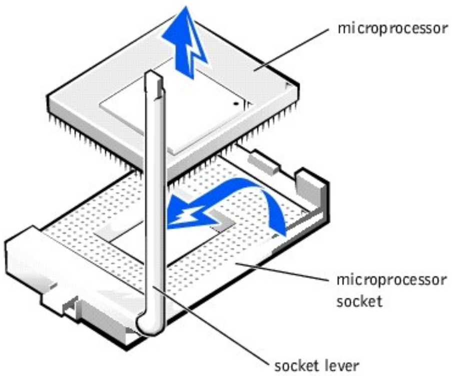


6. Remove the microprocessor from its connector.

   Your microprocessor uses a ZIF socket with a lever-type handle that secures or releases the microprocessor.

To remove the microprocessor, pull the socket lever straight up until the microprocessor is released. Then remove the microprocessor from the socket.

Removing the Microprocessor



Replacing the Microprocessor

NOTICE: Do not reuse the old heat sink assembly when replacing the microprocessor package. Doing so can cause the microprocessor to overheat because of an inadequate amount of thermal compound between the heat sink assembly and the microprocessor package.

1. Install the new microprocessor in the socket:

   a. Remove the plastic cover that is attached to the bottom of the new heat sink assembly.

   b. Ensure that the lever on the microprocessor socket is fully extended to the release position.

NOTICE: When you place the microprocessor in the socket, ensure that the microprocessor aligns properly with the socket. You must position the microprocessor correctly in the socket to avoid damage.

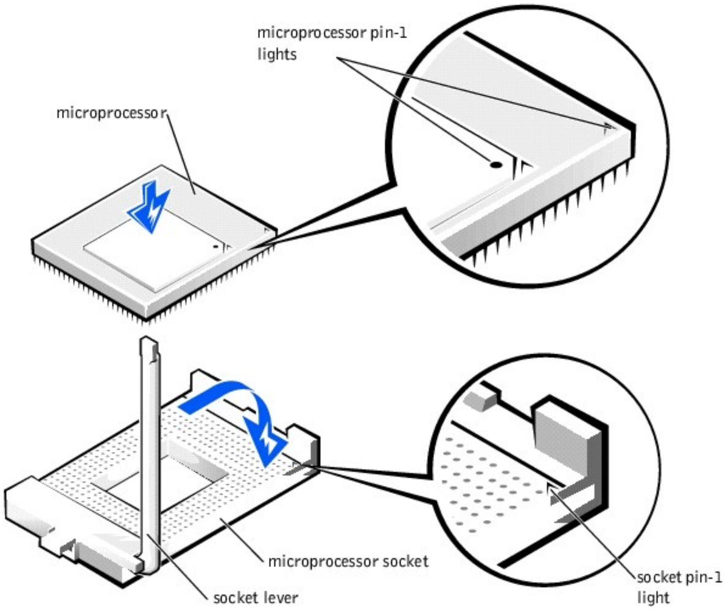
   c. Align pin 1 of the new microprocessor with pin 1 of the socket.

   NOTE: Pin 1 of the microprocessor is indicated by a small dot or a triangle in one corner of the microprocessor. Pin 1 of the socket is indicated by a small triangle in one corner of the socket. See "Replacing the Microprocessor."

   d. Carefully set the microprocessor in the socket and press it down lightly to seat it.

   e. Rotate the socket lever back toward the socket until it snaps into place, securing the microprocessor.

Replacing the Microprocessor



2. Install the microprocessor heat sink:

NOTICE: If you are installing a microprocessor upgrade kit from Dell, remove the plastic cover that is attached to the bottom of the new heat sink before installing it.

   a. Lower the heat sink to the microprocessor so that the heat sink fits in the heat sink retention base.

   b. For each of the replacement metal clips that secure the heat sink to the microprocessor, fit the end of the clip that does not have the latch to the heat sink retention base. Then, press down on the clip's latch to secure the clip to the heat sink retention base (see "Removing the Microprocessor Heat Sink").

3. Replace the airflow shroud.

4. Rotate the power supply back into position until the securing tab snaps into the release latch.

5. Replace the computer cover and restart the computer.

6. Enter system setup, and confirm that the top line in the **System Data** area correctly identifies the new microprocessor. Also, confirm that the values under the **CPU Information** menu are correct for the new microprocessor.

7. Exit system setup, and then run the Dell Diagnostics to verify that the new microprocessor is operating properly.

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Microprocessor Cooling Fan

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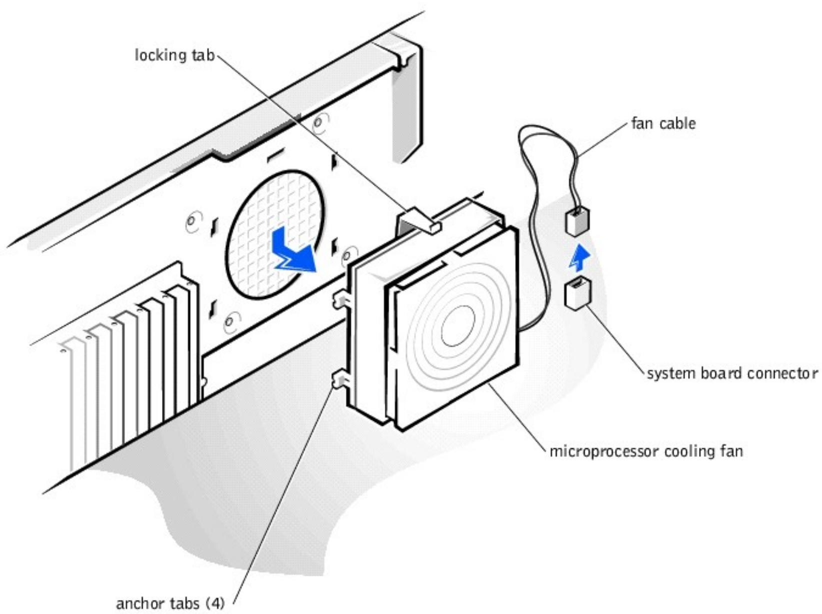
Removing the Microprocessor Cooling Fan

CAUTION: Before you perform this procedure, see "Precautionary Measures."

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power lights on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Rotate the power supply away from the system board.
3. Remove the airflow shroud.
4. Disconnect the fan power cable from its connector on the system board (FAN). To locate this connector, see "System Board Components."
5. Gently pull the plastic locking tab back, and slide the fan toward the system board.

Removing the Microprocessor Cooling Fan



6. Lift the fan out of the chassis.

Replacing the Microprocessor Cooling Fan

To replace the microprocessor cooling fan, perform the removal procedure in reverse.

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Microprocessor Airflow Shroud

Dell™ OptiPlex™ GX400 Service Manual

- Removing the Microprocessor Airflow Shroud
- Replacing the Microprocessor Airflow Shroud

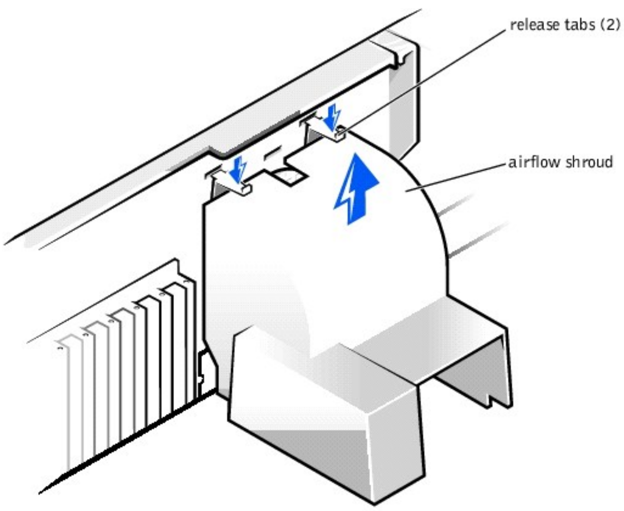
Removing the Microprocessor Airflow Shroud

CAUTION: Before you perform this procedure, see "Precautionary Measures."

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Lay the computer on its right side.
3. Rotate the power supply away from the system board.
4. Remove the airflow shroud by pulling back the release tabs of the shroud and lifting the shroud up until the anchor tabs disengage from the chassis frame. See "Removing the Airflow Shroud." Then lift the airflow shroud out of the chassis.

Removing the Airflow Shroud



Replacing the Microprocessor Airflow Shroud

To replace the microprocessor airflow shroud, perform the removal procedure in reverse.

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Power Supply

Dell™ OptiPlex™ GX400 Service Manual

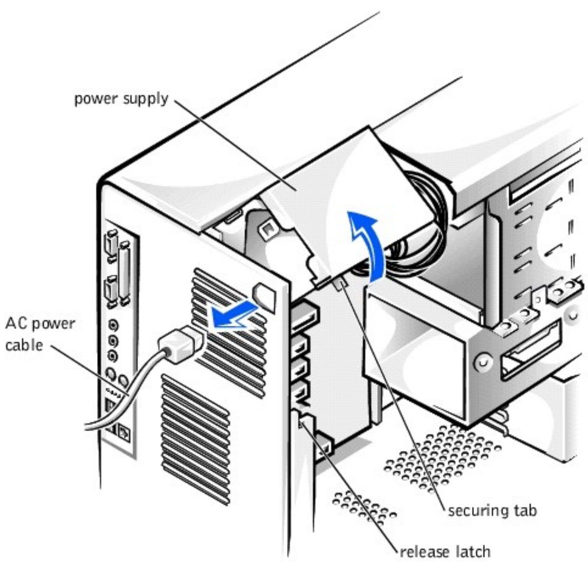
Rotating the Power Supply

To access some of the components on the system board, you may need to rotate the power supply out of the way.

CAUTION: Before you perform this procedure, see "Precautionary Measures."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Ensure that the AC power cable is disconnected from the AC power receptacle on the back of the power supply. See "Rotating the Power Supply."
3. Free the power supply from the securing tab by pressing the tab labeled "RELEASE." Then rotate the power supply upward until it locks in its extended position.

Rotating the Power Supply



Removing the Power Supply

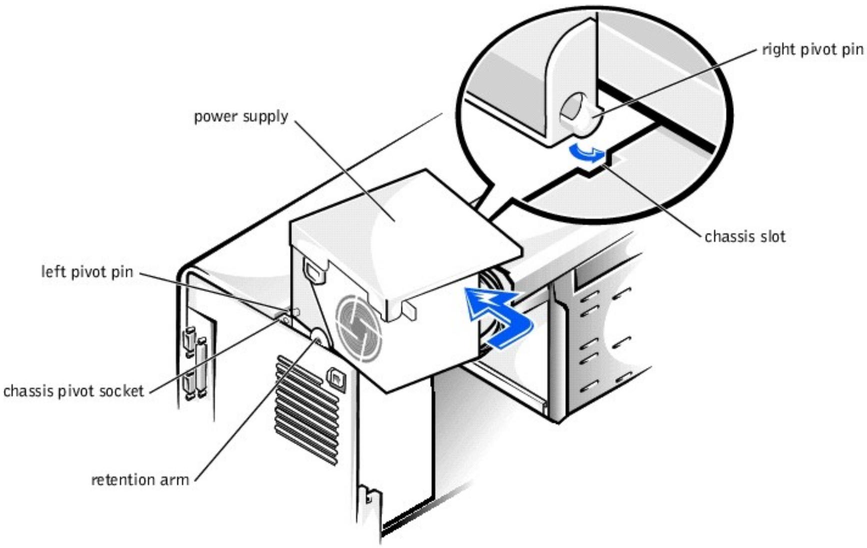
1. Rotate the power supply away from the system board.
2. Disconnect the power supply cables from all drives.
3. Disconnect the power supply cables from the system board.
4. Lift the front of the power supply up to its fully extended position.
5. Rotate the right side of the power supply up and away from the chassis.

   The pivot pin on the right rear of the power supply rises up and exits the chassis slot.

6. Disengage the retention arm pin on the left side of the power supply from the retention arm socket.

7. Disengage the pivot pin on the left rear of the power supply from the chassis socket.

Removing the Power Supply



8. Lift the power supply away from the chassis.

Replacing the Power Supply

1. Insert the pivot pin on the left rear of the power supply into the chassis socket.
2. Insert the retention arm pin on the left side of the power supply in the retention arm socket.
3. Rotate the right side of the power supply toward the chassis.

   The pivot pin on the right rear of the power supply inserts into the chassis slot. See "Removing the Power Supply."
4. Connect the power supply cables to the system board.
5. Connect the power supply cables to all drives.
6. Rotate the power supply back into position until the securing tab snaps into the release latch.
7. Replace the computer cover and restart the computer.

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System Board

Dell™ OptiPlex™ GX400 Service Manual

Removing the System Board

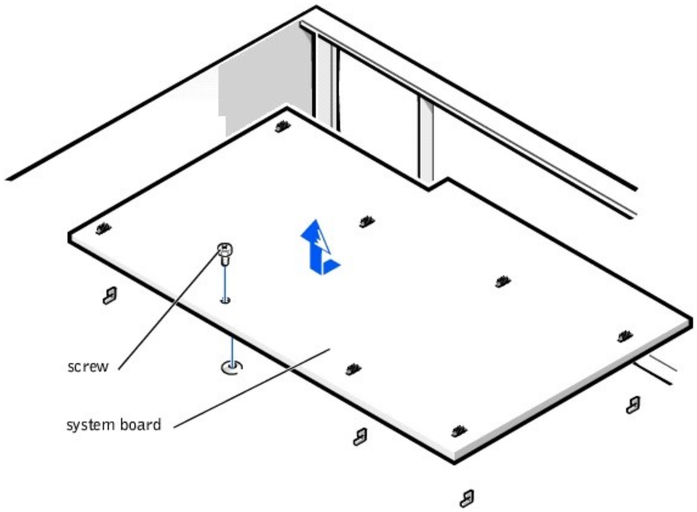
CAUTION: Before you perform this procedure, see "Precautionary Measures."

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Lay the computer down on its right side.
3. Rotate the power supply away from the system board.
4. Remove the AGP card brace or AGP card clip.
5. Remove all expansion cards.
6. Remove all memory modules.
7. Remove the microprocessor airflow shroud.
8. Remove the microprocessor.
9. Remove the microprocessor cooling fan.
10. Disconnect all cables from the system board.
11. Slide all drive brackets partially out of the chassis.
12. Remove the screw that secures the system board to the bottom of the chassis.
13. Slide the system board toward the front of the chassis until it stops.

    This unlocks the system board.
14. Lift the front of the system board.
15. Lift the system board out of the chassis at an angle.

Removing the System Board



Replacing the System Board

1. Lower the system board into the chassis at an angle, with the I/O panel connectors lowered into the chassis.
2. Carefully push down evenly on both sides of the system board to engage the grounding clips onto their respective chassis tabs.

NOTICE: Do not twist the system board as you position it in the chassis.

3. Slide the system board toward the rear of the chassis until it stops.

   This locks the system board into position.

4. Replace the system board mounting screw.
5. Replace all components on the system board by performing step 3 through step 11 of "Removing the System Board" in reverse.
6. Set the jumpers on the new system board so that they are identical to those on the original board.
7. Replace the computer cover and restart the computer.
8. Run system setup to ensure that your settings are correct and that all system board components are correctly identified.
9. Run the Dell Diagnostics to verify that the computer is operating properly.

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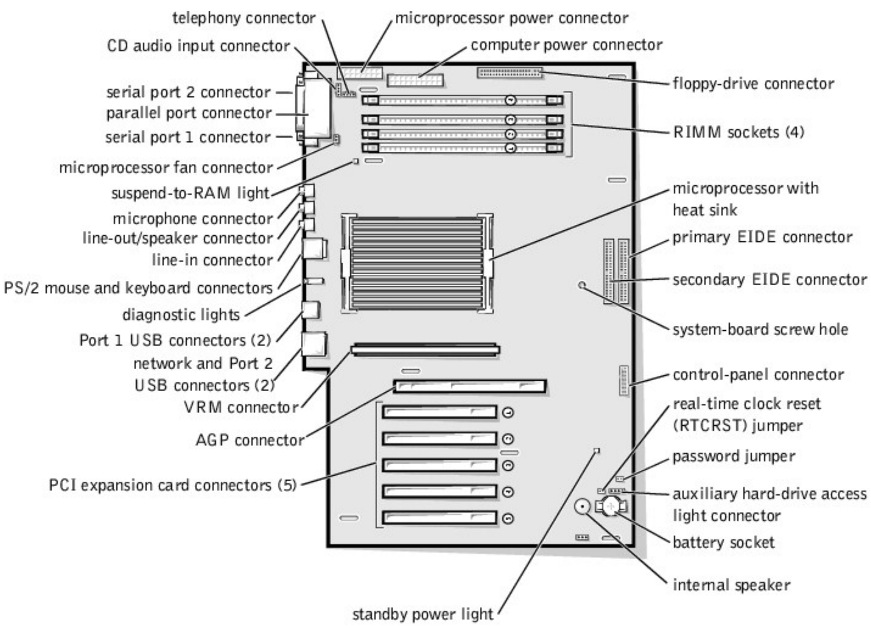
System Board Components

Dell™ OptiPlex™ GX400 Service Manual

- Components
- Labels
- Jumpers

Components

System Board Components



Labels

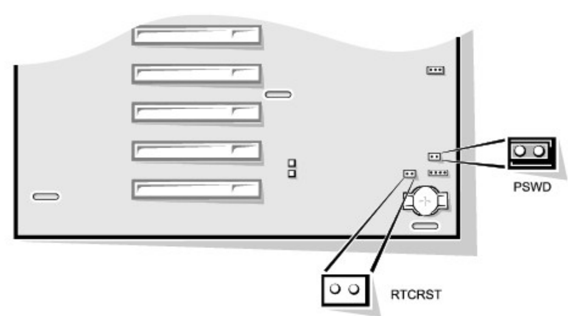
System-Board Labels

Connector or Component	Label
AGP	AGP connector
AUX_LED	Auxiliary hard-drive access light connector
BATTERY	Battery socket
CD_IN	CD audio input connector
CPU_POWER	Microprocessor power connector
DS1	Diagnostic lights
DSKT	Floppy-drive connector
FAN	Microprocessor fan connector
IDE1	Primary EIDE connector
IDE2	Secondary EIDE connector
KYBD	PS/2 keyboard connector

L_IN	Line-in connector
L_OUT	Line-out/speaker connector
MIC	Microphone connector
MICROPROCESSOR	Microprocessor with heat sink
MSE	PS/2 mouse connector
NIC	Network adapter connector
PANEL	Control-panel connector
PAR	Parallel port connector
PCI*n*	PCI expansion-card connector
POWER	Computer power connector
PSWD	Password jumper
RIMM_*n*	RIMM socket
RTCRST	Real-time clock reset jumper
SER	Serial port connectors
SPKR	Internal speaker
STANDBY_LED	Standby power light
STR	Suspend-to-RAM light
TAPI	Telephony connector
USB	Port 2 USB connectors (2)
USB2	Port 1 USB connectors (2)
VRM	VRM connector

Jumpers

System Board Jumpers

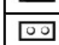
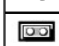


NOTICE: Ensure that your computer is turned off before you change a jumper setting. Otherwise, damage to your computer or unpredictable results may occur.

To change a jumper setting, pull the plug off its pin(s) and carefully fit it down onto the pin(s) indicated.

The following table lists the system board jumpers and their settings.

System-Board Jumper Settings

Jumper	Setting	Description
PSWD	 (default)	Password features are enabled.
		Password features are disabled.
RTCRST		Real-time clock reset. Can be used for troubleshooting.
 *jumpered*  *unjumpered*		

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Dell™ OptiPlex™ GX400 Service Manual

- Notes, Notices, and Cautions

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

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VRM

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- Removing the VRM
- Replacing the VRM

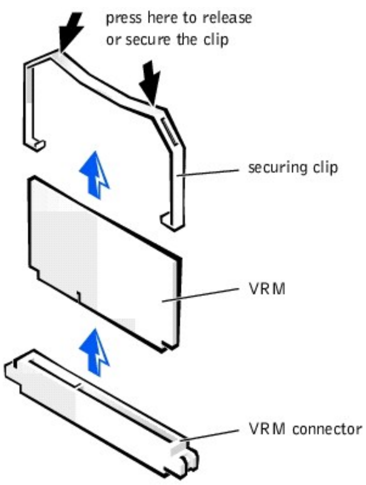
Removing the VRM

CAUTION: Before you perform this procedure, see "Precautionary Measures."

NOTICE: Before disconnecting a device from the computer or removing a component from the system board, verify that the standby power light on the system board has turned off. To locate this light, see "System Board Components."

1. Turn off the computer and devices, disconnect them from their electrical outlets, wait at least 5 seconds, and then remove the computer cover.
2. Rotate the power supply away from the system board.
3. Remove the VRM securing clip:
   a. Press down on the two raised points of the clip's top surface to release it from the VRM connector.
   b. Lift the clip away from the VRM.

Removing the VRM



4. Grasp the VRM by its top corners, and ease it out of its connector.

Replacing the VRM

1. Align the slot on the bottom of the new VRM with the ridge inside the connector.
2. Press the VRM straight into the connector.
3. Replace the VRM securing clip:
   a. Lower the clip onto the VRM so that the top corners of the VRM go through the slots in the clip.
   b. Press down on the two raised points of the clip's top surface to secure it to the VRM connector (see "Removing the VRM").
4. Rotate the power supply back into position until the securing tab snaps into the release latch.
5. Replace the computer cover and restart the computer.

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